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(54) **THREE-BARREL FROZEN PRODUCT DISPENSER**

Spendeeinrichtung für gefrorene Produkte mit drei Gefrierzylindern

DISTRIBUTEUR DE PRODUITS CONGELES A TROIS CYLINDRES

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(56) References cited:

US-A- 2 239 165	US-A- 3 052 381
US-A- 3 323 321	US-A- 3 719 056
US-A- 4 707 997	US-A- 4 869 072
US-A- 5 931 343	US-A- 5 957 040

- **PATENT ABSTRACTS OF JAPAN vol. 013, no. 233 (C-601), 29 May 1989 (1989-05-29) -& JP 01 043154 A (SANYO ELECTRIC CO LTD), 15 February 1989 (1989-02-15)**
- **PATENT ABSTRACTS OF JAPAN vol. 1998, no. 10, 31 August 1998 (1998-08-31) -& JP 10 136903 A (MITSUBISHI HEAVY IND LTD), 26 May 1998 (1998-05-26)**

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Description

[0001] The present invention relates generally to a beverage dispenser and more particularly relates to a frozen product dispenser with three product barrels and one compressor.

[0002] Known frozen product dispensers generally come in a two-barrel format or a four-barrel format. By "barrel", we mean a mixing chamber for a type, flavor, or brand of a beverage, confection, or other type of product. The two-barrel device can thus produce two brands of the frozen products and a blend of the two brands. The four-barrel device can produce four brands and several blends. The four-barrel device is generally a duplication of the two-barrel device in that the four-barrel device may have twice as many parts and may have almost twice the dimensions as the two-barrel device.

[0003] For example, a conventional two-barrel device may have a width of about seventeen (17) inches (about 43 centimeters) to about twenty-five (25) inches (about 64 centimeters) and a length of about twenty-four (24) inches (about 61 centimeters) to about forty (40) inches (about 102 centimeters). A conventional four-barrel device may be about twice as large. Significantly, the four-barrel device also uses two compressors as opposed to one compressor in the standard two-barrel device. As such, although the four-barrel device is more versatile in product selection, it takes up almost twice as much counter space as the two-barrel device and may require almost twice as much power and maintenance.

[0004] In many commercial outlets, however, there is an ever-increasing demand for viable counter space. Although a proprietor may desire to dispense more than two brands and one blend of the frozen products, the proprietor may not be willing to forego valuable counter space for the extra versatility of the larger product dispenser. Further, the proprietor may not be interested in the additional cost, noise, and maintenance generally required for a four-barrel device having two-compressors. 80818.621

[0005] US 3052381, on which the pre-characterising part of claim 1 is based, discloses a piston cock unit for a substance such as ice-cream, having three non-pressurised cylinders which allow three different ice-cream sorts or mixtures of two of them to be dispensed.

[0006] US 3323321 discloses a soft ice-cream machine having two freezing barrels from which ice-cream may be dispensed.

[0007] US 4869072 discloses a frozen beverage dispenser having two pressurised cooling chambers which are cooled by a remote refrigeration unit.

[0008] There is a need, therefore, for a device that offers more flexibility and brands than known two-barrel frozen product dispensers. Such a dispenser should provide more brands and blends than known two-barrel devices without taking up anymore counter space, generating anymore noise, using anymore power, or requiring

anymore maintenance. Further, the device preferably should be easy to use and reasonably priced.

[0009] The present invention thus provides a dispenser for providing a number of frozen products. The dispenser comprises a refrigeration system; and a product delivery system; characterised in that said refrigeration system comprises a single compressor; and said product delivery system comprises three pressurised product barrels so as to provide three frozen products and up to two blends of said products.

[0010] Specific embodiments may include the use of a frame. The frame may have a width of about seventeen (17) inches (about 43 centimeters) to about twenty-five (25) inches (about 64 centimeters) and a length of about twenty-four (24) inches (about 61 centimeters) to about forty (40) inches (about 102 centimeters). The dispenser may provide a number of frozen carbonated beverages, a number of frozen noncarbonated beverages, or a number of partially frozen products.

[0011] A number of product sources may be used. The product sources may be in communication with the three pressurised product barrels via a number of product pumps. A water source may be used. The water source may be in communication with the three pressurised product barrels via a water pump. A gas source also may be used. The gas source may be in communication with the three pressurised product barrels via a regulator. The product delivery system also may include a number of expansion chambers in communication with the three pressurised product barrels so as to accept product from the product sources, water from the water source, and gas from the gas source. Each of the three pressurised product barrels may include a scraper blade positioned for rotation therein. The product delivery system also may include a nozzle in communication with the three pressurised product barrels.

[0012] The refrigeration system may include a number of evaporators in communication with the compressor. The evaporators may include a number of evaporator lines encircling the three pressurised product barrels. The evaporator lines may encircle the three pressurised product barrels via a shrink fit. The compressor may include about 150 to 250 duty cycles per day. A control circuit may be used in the operation of the product delivery system and the refrigeration system.

[0013] The method of the present invention may provide a number of frozen beverages. The method includes the step of providing three product sources, providing a water source, mixing the three products and the water to form three beverages, delivering the three beverages to three product barrels, freezing the three beverages within the three product barrels by operating one compressor, and dispensing three frozen beverages and up to two blends of the beverages. The method may further include the steps of providing a gas source and mixing the three products, the water, and the gas. The frozen beverages may include carbonated and noncarbonated beverages.

[0014] A preferred embodiment of the present invention will now be described by way of example only and with reference to the accompanying drawings, in which:

Fig. 1 is a partially exploded view of the component of the three-barrel frozen product dispenser of the present invention;

Fig. 2 is a schematic diagram of the basic components of the frozen product dispenser of Fig. 1;

Fig. 3 is a schematic diagram of the refrigeration system of the frozen product dispenser of Fig. 1.

[0015] Referring now to the drawings, in which like numerals refer to like elements throughout the several views, Figs. 1 through 3 show a frozen product dispenser 100 of the present invention. Although the frozen product dispenser 100 as described herein is used in the context of a frozen carbonated product such as a carbonated soft drink or the like, it is understood that the invention is equally applicable to any type of frozen or partially frozen dispensable product or confection such as noncarbonated beverages, ice creams, yogurts, coffee drinks, and the like.

[0016] The frozen product dispenser 100 may include a frame 105. The frame 105 preferably has a footprint similar to that of a conventional two-barrel frozen carbonated product dispenser.

Specifically, the frame 105 may have a width 106 of about seventeen (17) inches (about 43 centimeters) to about twenty-five (25) inches (about 64 centimeters) and a length 107 of about twenty-four (24) inches (about 61 centimeters) to about forty (40) inches (about 102 centimeters). The frame 105 may have a height 108 that is somewhat taller than the conventional two-barrel device. Specifically, the height 108 of the frame 105 may be about twenty-four (24) inches (about 61 centimeters) to about forty-eight (48) inches (about 122 centimeters). This additional height 108 is generally permitted in that the height dimension does not take up any further counter space. The frame 105 may be made out of conventional materials such as stainless steel, aluminum, tube steel, or similar materials.

[0017] The product dispenser 100 may include a number of product sources 110. Specifically, the product sources 110 may include a first concentrate source 120, a second concentrate source 130, and a third concentrate source 140. By the term "concentrate", we mean a conventional product syrup, concentrate, or similar types of beverage or confection sources or flavors. Each concentrate source 120, 130, 140 may provide a different type, flavor, or brand of a product or a beverage flavoring, i.e., a cherry flavoring or the like. As described above, the product and the product source 110 may be carbonated or noncarbonated. The concentrate sources 120, 130, 140 may be housed in any type of conventional storage structure such as a syrup tank, a bag in box, a figal, or similar types of containers. The concentrate sources 120, 130, 140 each may have a concentrate

pump 145. The concentrate pump 145 is generally positioned adjacent to the concentrate sources 120, 130, 140. The concentrate pump 145 may be of conventional design. The concentrate pump 145 and the concentrate sources 120, 130, 140 may be positioned outside of the frame 105 of the product dispenser 100 itself.

[0018] The product dispenser 100 also may include a water source 150 and a gas source 160. The water source 150 may be any type of potable water source. The gas source 160 may provide carbon dioxide gas or any type of compressed gas for the carbonated beverages. The gas source 160 may be housed in any type of pressurized gas container. The concentrate sources 120, 130, 140 may share the water source 150 and the gas source 160 or each concentrate source 120, 130, 140 may have a separate water source 150 and a separate gas source 160. Water from the water source 150 may be pumped into the product dispenser 100 via a water pump 170. The water pump 170 may be positioned within the frame 105 of the product dispenser 100. The water pump 170 may be of conventional design. The gas source 160 may have a regulator 175 thereon so as to meter the flow of the gas. The regulator 175 may be of conventional design. The gas source 160 and the regulator 175 may be positioned outside of the frame 105 of the product dispenser 100.

[0019] The concentrate sources 120, 130, 140 and the water source 150 may be connected to a flow control device 180 positioned within the frame 105 of the product dispenser 100. The flow control device 180 may contain a number of metering valves, such as volumetric valves or the like, to meter the appropriate amount of concentrate flow from the concentrate sources 120, 130, 140 and the appropriate amount of water flow from the water source 150 so as to mix the desired product. Each of the concentrate sources 120, 130, 140 and the water source 150 may be connected to its own metering valve. The flow control device 180 and the metering valves therein may be of conventional design. The concentrate sources 120, 130, 140 and the water source 150 may be connected to the flow control device 180 by a series of fluid lines 190. The fluid lines 190 may be of conventional design.

[0020] The flow control device 180 in turn may be connected to a number of expansion chambers 200. In this case, a first expansion chamber 201, a second expansion chamber 202, and a third expansion chamber 203. The flow control device 180 and the expansion chambers 200 may be connected by a further series of fluid lines 210. These fluid lines 210 may merge with a gas line 220 in communication with the gas source 160 so as to introduce carbon dioxide or other types of carbonated gas into the fluid flow. The fluid and the carbon dioxide gas mix therein so as to form the carbonated beverage. The expansion chambers 200 then serve to reduce or balance the amount of pressure that may be in the fluid flow without the loss of the carbonation. The expansion chambers 200 may be of conventional de-

sign. Alternatively, a conventional carbonator tank may be used to mix the fluid flow with the gas flow as is known in the art.

[0021] The expansion chambers **200** may be in fluid communication with a number of product barrels **230**. The product barrels **230** may include a first barrel **240**, a second barrel **250**, and a third barrel **260**. The expansion chambers **200** and the product barrels **230** are connected by a number of fluid lines **270**. The product barrels **230** may be of conventional pressurized design. The product barrels **230** may hold the product therein under pressure as is known by those skilled in the art. Specifically, the incoming fluid is generally pressurized and the product barrels **230** will hold this pressure. The product barrels **230** also may be unpressurized depending upon the product used therein. The product barrels **230** may be metal structures and may be enclosed with foam insulation. As described in more detail below, the product barrels **230** may be encircled by refrigeration lines so as to freeze at least partially the product therein.

[0022] Positioned within each of the product barrels **230** may be a number of scraper blades **280**. The scraper blades **280** rotate so as to prevent the product therein from freezing completely. The scraper blades **280** also may scrape the partially frozen product off of the interior surface of the barrels **230**. The scraper blades **280** are driven by a number of drive motors **290** for rotation within the product barrels **230**. The scraper blades **280** and the drive motors **290** may be of conventional design.

[0023] Each product barrel **230** may be in communication with a nozzle **300** such that the frozen product may be served to the consumer. The nozzle **300** may be of conventional design. The nozzle **300** may permit more than one brand of a product to mix with another brand so as to create a blended product.

[0024] As described above and as is shown in detail in Fig. 3, the product dispenser **100** also includes a refrigeration system **310** so as to freeze at least partially the product therein. The refrigeration system **310** may include a standard compressor **320**. The compressor **320** may be of conventional design. For example, the compressor **320** may be a standard two (2) horsepower compressor or the like. The compressor **320** may be in fluid communication with a condenser **330**. The condenser **330** may be of conventional design. A fan **340** or another type of an air-moving device may cool the condenser **330** as is known in the art. In turn, the condenser **330** may be in fluid communication with an accumulator **350**. The accumulator **350** may be of conventional design.

[0025] The accumulator **350** may be in fluid communication with a number of evaporators **360**. In this case, a first evaporator **370** is positioned about the first barrel **240**, a second evaporator **380** is positioned about the second barrel **250**, and a third evaporator **390** is positioned about the third barrel **260**. The evaporators **360** preferably may be shrink-fitted on to the outer surface of each of the product barrels **230**. The evaporators **360**

may be of conventional design. Each of the components of the refrigeration system **310** may be connected by a series of fluid lines **400**. The refrigeration system **310** as a whole may use a conventional refrigerant.

[0026] A control circuit **500** may control the operation of the product dispenser **100**. The control circuit **500** may include one or more control boards **510** and one or more control panels **520**. The control boards **510** may be of conventional design and may include a conventional microprocessor so as to control the refrigeration system **310** and the other elements of the product dispenser **100** as a whole. The control circuit **500** is programmed so as to accommodate the use of the three product barrels **230**. The control circuit **500** may be programmed in any conventional programming language.

[0027] In use, syrup or other types of concentrate or product from the product sources **110** may be pumped via the concentrate pumps **145** to the flow control device **180**. Likewise, water from the water source **150** is pumped to the flow control device **180** via the water pump **170**. The ingredients are mixed therein and then flow towards the expansion chambers **200**. In the process, the fluid is mixed with carbon dioxide or other type of compressed gas from the gas source. The product then flows from the expansion chambers **200** to the barrels **230**. The product is then partially frozen therein by the refrigeration system **310** while being mixed and rotated via the scraper blades **280**. The frozen product is then served via the nozzle **300**.

[0028] With respect to the refrigeration system **310**, the accumulator **350** delivers refrigerant to the compressor **330** via the fluid lines **400**. The compressor **320** delivers the refrigerant to the condenser **330**. The condenser **330**, in turn, delivers the refrigerant to the accumulator **350**. The accumulator **350** then circulates the refrigerant through the various evaporators **360**. The refrigerant flows through the fluid lines **400** so as to come into direct contact with the walls of the product barrels **230** for efficient heat transfer therewith. The refrigerant then returns to the accumulator **350** via the fluid lines **400** so as to repeat the process. The refrigeration system **310** may cycle on and off as is appropriate.

[0029] The present embodiment thus provides a frozen product dispenser **100** that can dispense three different flavors, brands, or types and two blends for a total of five different product flavors. The product dispenser **100** of the present embodiment thus provides these additional flavors in the frame **105** of the same or a similar footprint to that of a conventional two-barrel dispenser.

The present embodiment thus provides greater product versatility in the same sized product dispenser frame.

[0030] Furthermore, the present embodiment also provides these additional flavors with the use of the single compressor **320**. The present embodiment thus results in additional flavors with little additional electrical usage or additional maintenance. In fact, because the duty cycle of the compressor **320** may be somewhat longer given the use of the three product barrels **230**,

the life of the compressor 320 and the refrigeration system 310 as a whole may be greatly extended in that the number of duty cycles may be reduced. For example, the product dispenser 100 as described herein may serve approximately fourteen (14) gallons (approximately 53 liters) to about twenty-two (22) gallons (about 83 litres) of product during a typical day while the compressor 320 may cycle on and off about 150 to 250 times a day. The life of the refrigeration system 310 as a whole should be extended by reducing the number of duty cycles.

Claims

1. A dispenser (100) for providing a plurality of frozen products, comprising:

a refrigeration system (310); and
a product delivery system;

characterised in that said refrigeration system comprises a single compressor (320); and
said product delivery system comprises three pressurized product barrels (230) so as to provide three frozen products and up to two blends of said products.

2. The dispenser (100) of claim 1, further comprising a frame (105), said frame comprising a width of about seventeen (17) inches (about 43 centimeters) to about twenty-five (25) inches (about 64 centimeters) and a length of about twenty-four (24) inches (61 centimeters) to about forty (40) inches (about 102 centimeters).
3. The dispenser (100) of claim 1 or 2, wherein said dispenser dispenses a plurality of frozen carbonated beverages.
4. The dispenser (100) of claim 1 or 2, wherein said dispenser dispenses a plurality of frozen noncarbonated beverages.
5. The dispenser (100) of claim 1 or 2, wherein said dispenser dispenses a plurality of partially frozen products.
6. The dispenser (100) of any preceding claim, wherein said product delivery system comprises a plurality of product sources (110), said plurality of product sources in communication with said three pressurized product barrels (230) via a plurality of product pumps (145).
7. The dispenser (100) of any preceding claim, wherein said product delivery system comprises a water source (150), said water source in communication

with said three pressurized product barrels (230) via a water pump (170).

8. The dispenser (100) of any preceding claim, wherein said product delivery system comprises a gas source (160), said gas source in communication with said three pressurized product barrels (230) via a regulator (175).
9. The dispenser (100) of any preceding claim, wherein said product delivery system comprises a plurality of expansion chambers (200) in communication with said three pressurized product barrels (230) so as to accept product from said product sources (100), water from said water source (150) and gas from said gas source (160).
10. The dispenser (100) of any preceding claim, wherein each of said three pressurized product barrels (230) comprises a scraper blade (280) positioned for rotation therein.
11. The dispenser (100) of any preceding claim, wherein said product delivery system comprises a nozzle (300) in communication with said three pressurized product barrels (230).
12. The dispenser (100) of any preceding claim, wherein said refrigeration system (310) comprises a plurality of evaporators (360) in communication with said compressor.
13. The dispenser (100) of claim 12, wherein said plurality of evaporators (360) comprises a plurality of evaporator lines encircling said three pressurized product barrel (230).
14. The dispenser (100) of claim 12, wherein said plurality of evaporators (360) comprises a plurality of evaporator lines encircling said three pressurized product barrels (230) via a shrink fit.
15. The dispenser (100) of any preceding claim, wherein said compressor (320) carries out about 150 to 250 duty cycles per day.
16. The dispenser (100) of any preceding claim, further comprising a control circuit (500) for operation of said product delivery system and said refrigeration system.
17. A method of providing a plurality of frozen beverages, comprising the steps of
providing three product sources (110);
providing a water source (150);
mixing said three products and said water to form three beverages;
delivering said three beverages to three prod-

uct barrels (230);

freezing said three beverages within said three product barrels by operating one compressor (320); and

dispensing three frozen beverages and up to two blends of said beverages. 5

18. The method of claim 17, further comprising the steps of providing a gas source (160) mixing said three products, said water, and said gas. 10

19. The method of claim 17, wherein said plurality of frozen beverages comprises carbonated and non-carbonated beverages. 15

Patentansprüche

1. Spender (100) für eine Bereitstellung einer Mehrzahl von tiefgekühlten Produkten, umfassend: 20

eine Kühlanlage (310); und
ein Produktabgabesystem;

dadurch gekennzeichnet, dass die Kühlanlage einen einzigen Kompressor (320) umfasst; und das Produktabgabesystem drei druckbeaufschlagte Produktfässer (230) umfasst, um drei tiefgekühlte Produkte und bis zu zwei Mischungen der Produkte bereitzustellen. 25 30

2. Spender (100) nach Anspruch 1, weiter umfassend einen Rahmen (105), wobei der Rahmen umfasst: eine Breite von etwa siebzehn (17) Inch (etwa 43 Zentimeter) bis zu etwa fünfundzwanzig (25) Inch (etwa 64 Zentimeter) und eine Länge von etwa vierundzwanzig (24) Inch (61 Zentimeter) bis zu etwa vierzig (40) Inch (etwa 102 Zentimeter). 35

3. Spender (100) nach Anspruch 1 oder 2, bei dem der Spender eine Mehrzahl von tiefgekühlten kohlen-säurehaltigen Getränken abgibt. 40

4. Spender (100) nach Anspruch 1 oder 2, bei dem der Spender eine Mehrzahl von tiefgekühlten nichtkoh-lensäurehaltigen Getränken abgibt. 45

5. Spender (100) nach Anspruch 1 oder 2, bei dem der Spender eine Mehrzahl von teilweise tiefgekühlten Produkten abgibt. 50

6. Spender (100) nach einem vorangehenden An-spruch, bei dem das Produktabgabesystem eine Mehrzahl von Produktquellen (110) umfasst, wobei die Mehrzahl von Produktquellen mit den drei druckbeaufschlagten Produktfässern (230) über ei-ne Mehrzahl von Produktpumpen (145) in Verbin-dung steht. 55

7. Spender (100) nach einem vorangehenden An-spruch, bei dem das Produktabgabesystem eine Wasserquelle (150) umfasst, wobei die Wasser-quelle mit den drei druckbeaufschlagten Produkt-fässern (230) über eine Wasserpumpe (170) in Ver-bindung steht.

8. Spender (100) nach einem vorangehenden An-spruch, bei dem das Produktabgabesystem eine Gasquelle (160) umfasst, wobei die Gasquelle mit den drei druckbeaufschlagten Produktfässern (230) über einen Regler (175) in Verbindung steht.

9. Spender (100) nach einem vorangehenden An-spruch, bei dem das Produktabgabesystem eine Mehrzahl von Expansionskammern (200) in Verbin-dung mit den drei druckbeaufschlagten Produktfäs-sern (230) umfasst, um ein Produkt von den Pro-duktsquellen (100), Wasser von der Wasserquelle (150) und Gas von der Gasquelle (160) aufzuneh-men.

10. Spender (100) nach einem vorangehenden An-spruch, bei dem jedes von den drei druckbeauf-schlagten Produktfässern (230) eine Abstreichklin-ge (280) umfasst, die darin drehbar gelagert ist.

11. Spender (100) nach einem vorangehenden An-spruch, bei dem das Produktabgabesystem eine Düse (300) in Verbindung mit den drei druckbeauf-schlagten Produktfässern (230) umfasst.

12. Spender (100) nach einem vorangehenden An-spruch, bei dem die Kühlanlage (310) eine Mehr-zahl von Verdampfern (360) in Verbindung mit dem Kompressor umfasst.

13. Spender (100) nach Anspruch 12, bei dem die Mehrzahl von Verdampfern (360) eine Mehrzahl von Verdampferleitungen umfasst, die die drei druckbeaufschlagten Produktfässer (230) umge-ben.

14. Spender (100) nach Anspruch 12, bei dem die Mehrzahl von Verdampfern (360) eine Mehrzahl von Verdampferleitungen umfasst, die die drei druckbeaufschlagten Produktfässer (230) über ei-ne Schrumpfpassung umgeben.

15. Spender (100) nach einem vorangehenden An-spruch, bei dem der Kompressor (320) etwa 150 bis 250 Betriebszyklen pro Tag durchführt.

16. Spender (100) nach einem vorangehenden An-spruch, weiter umfassend eine Steuerschaltung (500) zum Betrieb des Produktabgabesystems und der Kühlanlage.

17. Verfahren zur Bereitstellung einer Mehrzahl von tiefgekühlten Getränken, umfassend die Schritte
 Bereitstellen von drei Produktquellen (110);
 Bereitstellen einer Wasserquelle (150);
 Mischen der drei Produkte und des Wassers, 5
 um drei Getränke zu bilden;
 Abgeben der drei Getränke an drei Produktfässer (230);
 Tiefkühlen der drei Getränke in den drei Produktfässern durch Betreiben eines Kompressors 10
 (320); und
 Abgeben von drei tiefgekühlten Getränken und bis zu zwei Mischungen der Getränke.
18. Verfahren nach Anspruch 17, weiter umfassend die Schritte: Bereitstellen einer Gasquelle (160), Mischen der drei Produkte, des Wassers und des Gases. 15
19. Verfahren nach Anspruch 17, bei dem die Mehrzahl von tiefgekühlten Getränken kohlensäurehaltige und nichtkohlensäurehaltige Getränke umfasst. 20

Revendications

1. Distributeur (100) permettant de proposer plusieurs articles congelés, comprenant :
 un système de réfrigération (310) ; et
 un système de livraison de produit ;
 caractérisé en ce que ledit système de réfrigération comprend un seul compresseur (320) ; et ledit système de livraison de produit comprend trois cuves de produit sous pression (230) afin de proposer trois produits congelés et jusqu'à deux mélanges desdits produits.
2. Distributeur (100) selon la revendication 1, comprenant en outre un châssis (105), ledit châssis comprenant une largeur d'environ dix sept (17) pouces (environ 43 centimètres) à environ vingt cinq (25) pouces (environ 64 centimètres), et une longueur d'environ vingt quatre (24) pouces (61 centimètres) à environ quarante (40) pouces (environ 102 centimètres). 40
3. Distributeur (100) selon la revendication 1 ou 2, dans lequel ledit distributeur distribue une pluralité de boissons gazeuses congelées. 50
4. Distributeur (100) selon la revendication 1 ou 2, dans lequel ledit distributeur distribue une pluralité de boissons non gazeuses congelées. , 55
5. Distributeur (100) selon la revendication 1 ou 2, dans lequel ledit distributeur distribue une pluralité

de produits partiellement congelés.

6. Distributeur (100) selon l'une quelconque des revendications précédentes, dans lequel ledit système de livraison de produit comprend une pluralité de sources de produit (110), ladite pluralité de sources de produit étant en communication avec lesdites trois cuves de produit sous pression (230) via une pluralité de pompes de produit (145).
7. Distributeur (100) selon l'une quelconque des revendications précédentes, dans lequel ledit système de livraison de produit comprend une source d'eau (150), ladite source d'eau étant en communication avec lesdites trois cuves de produit sous pression (230) via une pompe à eau (170).
8. Distributeur (100) selon l'une quelconque des revendications précédentes, dans lequel ledit système de livraison de produit comprend une source de gaz (160), ladite source de gaz étant en communication avec lesdites trois cuves de produit sous pression (230) via un régulateur (175).
9. Distributeur (100) selon l'une quelconque des revendications précédentes, dans lequel ledit système de livraison de produit comprend une pluralité de chambres d'expansion (200) en communication avec lesdites trois cuves de produit sous pression (230) afin d'accepter le produit provenant desdites sources de produit (100), l'eau provenant de ladite source d'eau (150) et le gaz provenant de ladite source de gaz (160). 30
10. Distributeur (100) selon l'une quelconque des revendications précédentes, dans lequel chacune desdites trois cuves de produit sous pression (230) comprend une lame de raclage (280) positionnée pour la rotation à l'intérieur de la cuve. 35
11. Distributeur (100) selon l'une quelconque des revendications précédentes, dans lequel ledit système de livraison de produit comprend une buse (300) en communication avec lesdites trois cuves de produit sous pression (230). 45
12. Distributeur (100) selon l'une quelconque des revendications précédentes, dans lequel ledit système de réfrigération (310) comprend une pluralité d'évaporateurs (360) en communication avec ledit compresseur.
13. Distributeur (100) selon la revendication 12, dans lequel ladite pluralité d'évaporateurs (360) comprend une pluralité de conduites encerclant lesdites trois cuves de produit sous pression (230).
14. Distributeur (100) selon la revendication 12, dans

lequel ladite pluralité d'évaporateurs (360) comprend une pluralité de conduites d'évaporateur encerclant lesdites trois cuves de produit sous pression (230) via un serrage.

5

15. Distributeur (100) selon l'une quelconque des revendications précédentes, dans lequel ledit compresseur (320) réalise environ de 150 à 250 cycles de service par jour.

10

16. Distributeur (100) selon l'une quelconque des revendications précédentes, comprenant en outre un circuit de commande (500) pour le fonctionnement dudit système de livraison de produit et dudit système de réfrigération.

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17. Procédé permettant de proposer une pluralité de boissons congelées, comprenant les étapes consistant à :

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proposer trois sources de produit (110)

proposer une source d'eau (150) ;

mélanger lesdits trois produits et ladite eau pour produire trois boissons ;

délivrer lesdites trois boissons dans trois cuves de produit (230) ;

25

congeler lesdites trois boissons à l'intérieur desdites trois cuves de produit en faisant fonctionner un compresseur (320) ; et

distribuer trois boissons congelées et jusqu'à deux mélanges desdites boissons.

30

18. Procédé selon la revendication 17, comprenant en outre les étapes consistant à proposer une source de gaz (160), mélanger lesdites trois produits, ladite eau, et ledit gaz.

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19. Procédé selon la revendication 17, dans lequel ladite pluralité de boissons congelées comprend des boissons gazeuses et non gazeuses.

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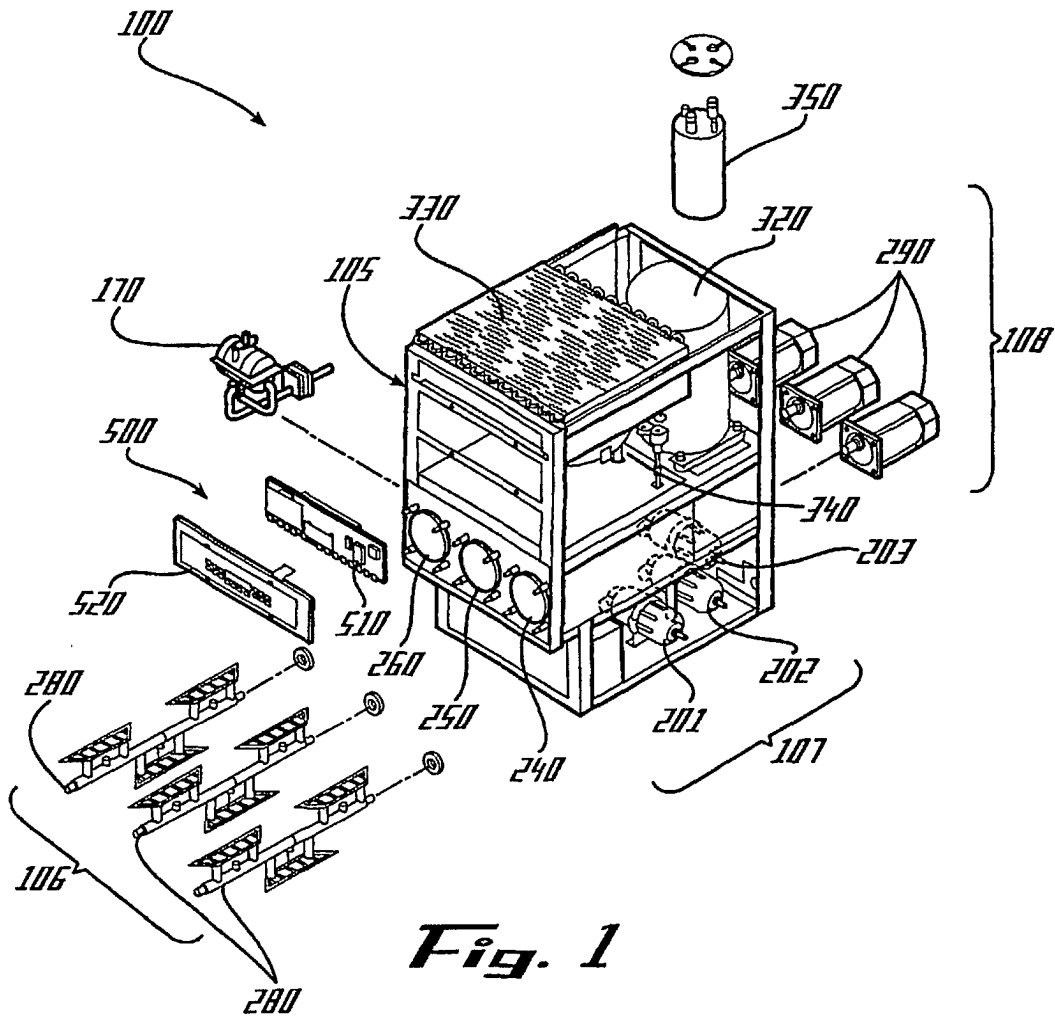


Fig. 1

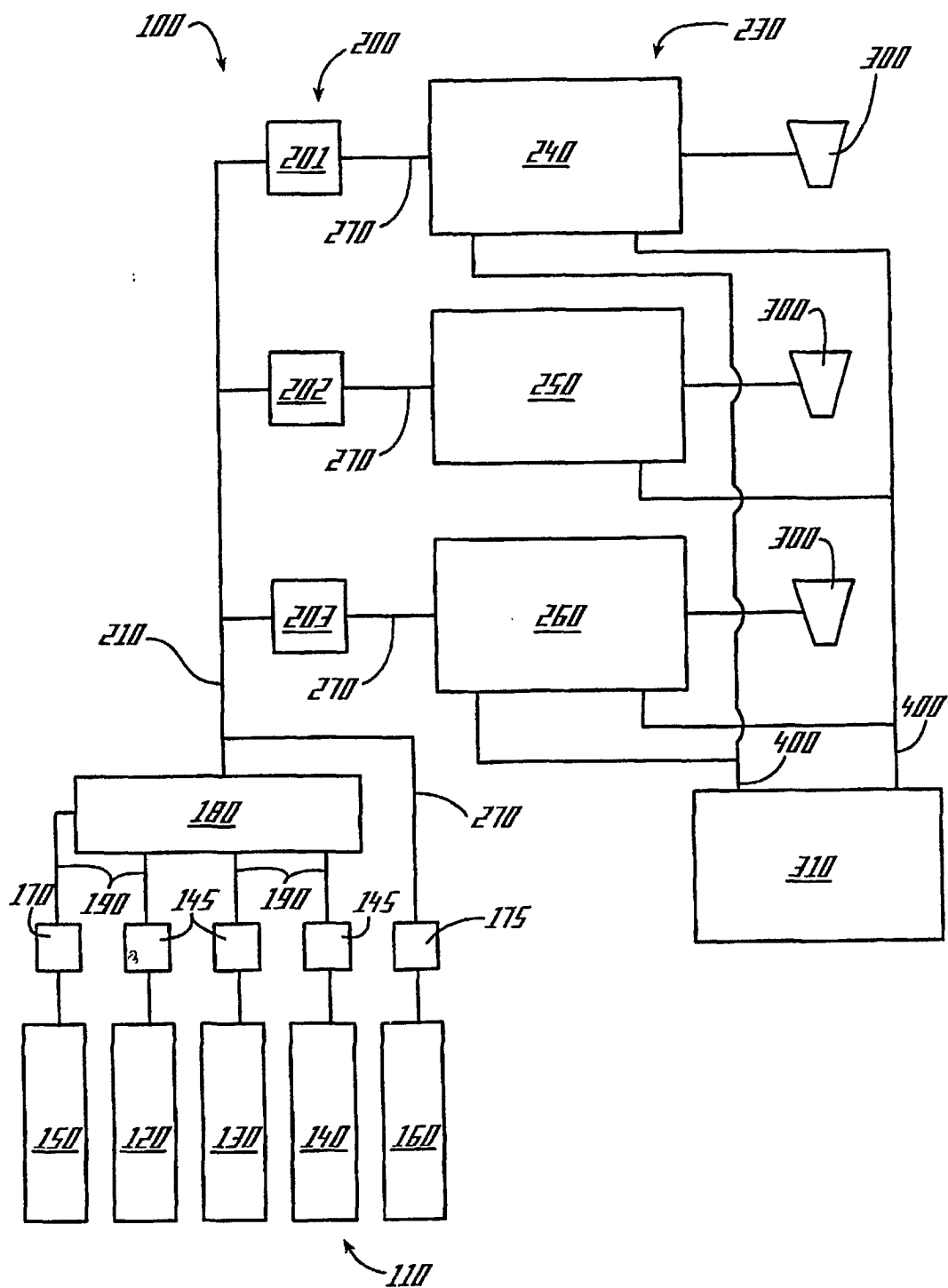


Fig. 2

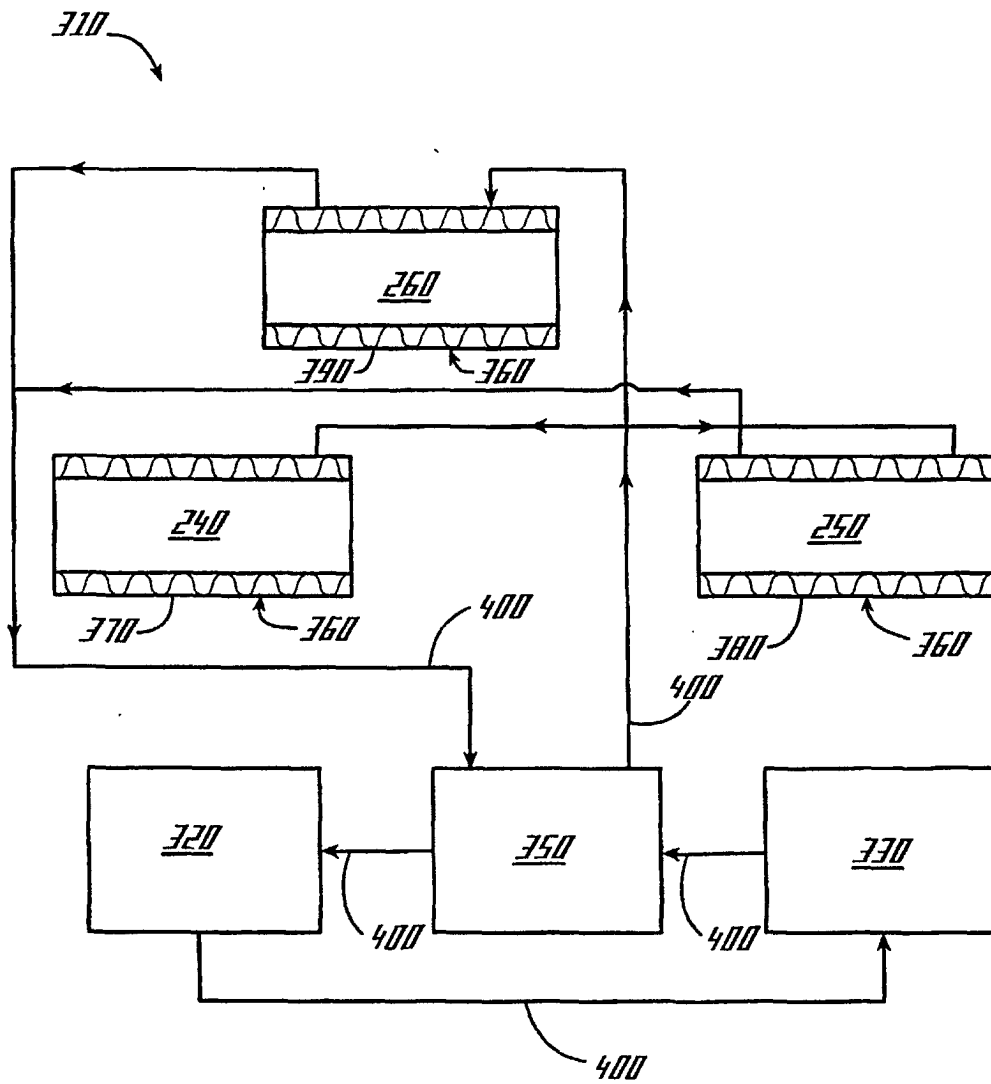


Fig. 3